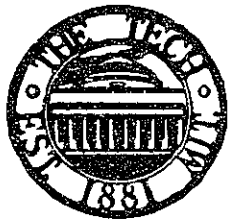


The Tech



OFFICIAL NEWSPAPER OF THE UNDERGRADUATES OF THE MASSACHUSETTS INSTITUTE OF TECHNOLOGY

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CAMBRIDGE, MASSACHUSETTS, TUESDAY, NOVEMBER 5, 1957

5 CENTS

Mud Fails To Stop Frosh Victors In EC Field Day

Last Saturday, the long-heralded East Campus Field Day was held. Daunted by the MITAA, Incomm, and the rain which falls perennially on Field Day, the Classes of '60 and '61 engaged in battle to preserve a cherished tradition, and to uphold the honor of each class.

The first event was a series of class matches between members of the two classes. The freshmen made a good showing, taking three of the four matches and thereby winning the point. Second on the agenda was a croquet match, held on the grass between the parallels. During this event the light rain which had been falling most of the morning turned into a downpour, forcing the spectators to seek shelter in the parallels. The combatants gallantly continued to play, sloshing on to the finish. Here again '61 was victorious and with two more points. Victory in croquet gave the frosh two more points.

The Tug of War was held next, and, by far, it attracted the largest number of participants. The sophs won the Tug of War held on the Saturday before Field Day, giving them possession of the Purple Shaft and an edge on the frosh. On Field Day, however, the frosh tugged to victory on the first series of pulls to tie the score, and in the last series defeated the sophs again despite the limitation of the number of men on each side to 25. Three more points were added to the account of '61.

Next in the order of events was the announcing of the winner of the

Purple Shaft Contest, won the previous Saturday by the sophs. The freshmen, who had located it shortly after it had been hidden, attempted to keep it from the clutches of the sophs and still manage a presentation as dictated by the rules of the Contest. Such a presentation was attempted on Wednesday night, but the plans went haywire and instead of a Shaft presentation, there was a brawl on the Senior House grounds. On Thursday the Shaft was stolen from the frosh and had not yet turned up by Field Day. Since certain rules of the contest had been violated by the frosh, East Campus House Committee awarded the four points of the Shaft Contest to the sophomores. As the preparations were being made for the Glove Fight, it was noticed that opposing some twenty freshmen were only three sophomores. These hardy members of '60 were granted a little extra time to round up several more sophs so that the fight would be little less one-sided. After ten minutes the number of sophs had risen to ten or so, and battle began. The battle raged for fifteen minutes despite waterbombs, torn shirts and lost pants. At the end of the fray the freshmen displayed four red gloves, but the sophs could muster only one white glove. The now victorious freshmen, sophomores, and spectators, wet and weary, retired to the basement of Munroe to relax with some liquid refreshment and to review the results of a hard day's work.

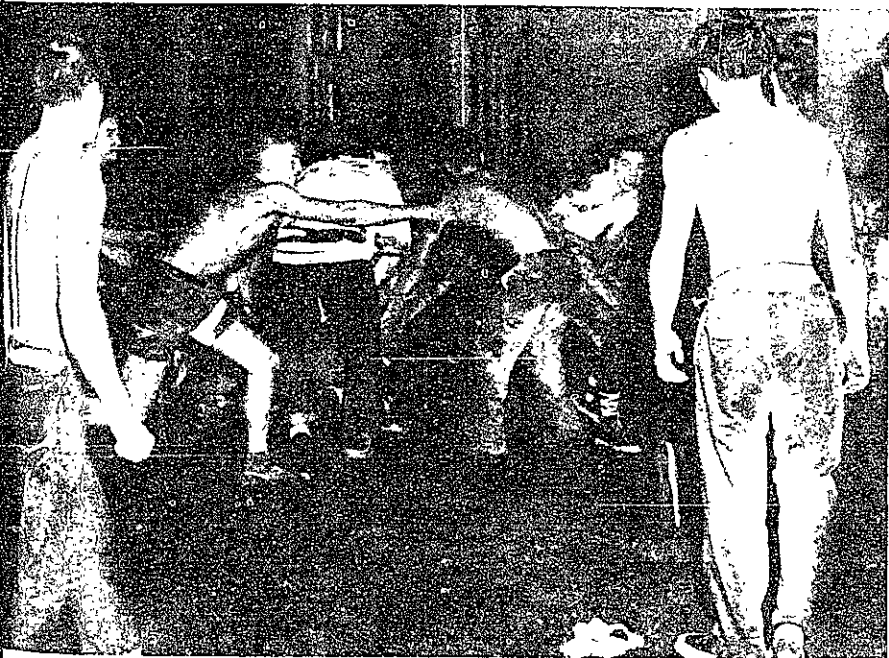


Photo by Malcolm Fraser

Despite the rain and mud, the freshman and sophomore classes of East Campus keep Field Day tradition partially alive with a glove fight between the parallels last Saturday.

Incomm Studies Motion Officially Underwriting Field Day Activities

Reaction to Athletic Association's action of the Q-Club Field Day by the Institute Committee is considering a motion which will, if passed, officially approve of freshman-sophomore rivalry in a form similar to that of the glove fight, purple shaft

Contest. Carl Swanson '60, Sophomore Institute Representative, originally presented a resolution reading: "Resolved that Athletic Association reconsider its denial of an athletic field day December first to Q-Club for unskilled, physical contests in the name of the good of the student body as a whole." He retracted his resolution, however, when John Irwin, Senior Class President, made a motion that, "Institute Committee believes that 'en masse'

manifestations of freshman - sophomore rivalry similar to Field Day in form are desirable, and we will underwrite (allow and aid) any group wishing to establish such manifestations subject to approval of plans presented to Institute Committee." After a short discussion, the body decided that such an important decision should not be made hastily, and therefore tabled the motion.

The motion will be reconsidered and acted upon at Incomm's next meeting, Thursday at 8:30 p.m. in Litchfield Lounge. It will be an open meeting, and all interested parties are invited to participate in the discussion.

The Freshman Council is considering holding a Field Day in the spring, but has not taken any definite action as yet.

MIT And Harvard Will Share New 6 Billion Electron Volt Accelerator

Building of a \$6,500,000 six billion electron volt accelerator in Cambridge began Monday afternoon with groundbreaking ceremonies. Plans were that President James R. Killian of MIT and President Nathan M. Pusey of Harvard would break ground for the Cambridge Electron Accelerator, before an audience of scientists and officials of the AEC, MIT, and Harvard. It symbolized the cooperation of scientists of the two schools in the design and operation of the accelerator, which will produce the highest energy electrons in the world.

The new machine, a synchrotron, which will be devoted to basic, unclassified research on the properties of the sub-nuclear particles and the forces which hold the nucleus together, will accelerate electrons to very nearly the speed of light and in the process will increase their mass by 12,000 times. It will be housed in a circular tunnel, sheathed in concrete, with a five-foot earth fill over the top. Heavy concrete blocks forming a portion of the wall can be arranged

to allow narrow beams of radiation to emerge into the large experimental building where research experiments will be located. The heavy shielding will eliminate any possible radiation hazard from the high-energy electron beam.

A dozen accelerator scientists and engineers are carrying out the basic design for the synchrotron under the direction of Dr. M. Stanley Livingston, Professor of Physics at MIT. About twenty scientists from MIT and Harvard are assisting as advisors in the design planning. A staff of about forty technical assistants will carry out the model studies, and will assemble and test the components.

Will Study "Strangeness"

With the tremendous energy developed in the new machine, physicists will be studying the fundamental forces underlying the structure of individual protons and neutrons. It is already known that many unstable forms of matter will be produced. Dr. Livingston explains, "We can identify some properties such as mass, energy, and spin, but particles are being found which differ in some other property, at present completely unknown and called 'strangeness.' The new synchrotron will help us to find the meaning of these particles, and to build a theory that takes them into account. Important new experiments should be possible."

When completed in January 1960, the machine will be available to faculty members and research students at MIT and Harvard who wish to make use of its high energy particles. Its facilities will also be open to qualified research workers from other New England institutions. While Boston has one of the largest concentrations of high-energy physics specialists in the world today, most of their work must be carried on at long distance, using facilities on Long Island and in California. The new accelerator will make their work more effective and should add significantly to the output of fundamental scientific research in this country.



Photo by Louis Nelson

Chancellor Stratton of MIT and President Pusey of Harvard use a two-handled shovel to break ground for the new Cambridge Electron Accelerator.

Problems Of Management Viewed At Industrial Relations Conference

A proposal for management-induced strikes was made here Friday "without ill-will or belligerency" by Leland Hazard, vice-president and general counsel of the Pittsburgh Plate Glass Company.

Mr. Hazard told an audience of business, labor and academic leaders celebrating the twentieth anniversary of the founding of the Industrial Relations Section at MIT that inflation is the great issue of our time and that management has the duty to halt inflation by saying no to union demands for wage increases.

"Management must begin now to refuse wage increases even though we know certainly that our refusal will produce strikes," he said.

"Strikes of themselves will not necessarily curb inflation. But if management has the wit to make the issue clear—that the hurt of the strike is inflicted and suffered not in passion or greed but in sober conviction that the American system is in jeopardy—a great advance can be made in our economic understanding."

Mr. Hazard told his audience that the wage-price spiral is like the "case

of the victim who originally suffers real pain, takes a drug of sufficient potency to alleviate the pain, then ultimately imagines the pain so that he may have the drug."

"Everybody fears inflation," he said, "but nobody will do anything about it."

He put the responsibility for stopping the wage-price spiral on management.

"If labor leaders refrain from more wage demands," he said, "who will guarantee them that the cost of living will stand still or that other labor leaders will not raid their unhappy unions?"

"And if the government yanks the credit rug from underneath higher prices, they will fall all right, but too many votes will walk hard pavements, unemployed and quite disinterested in the hardened dollar."

But while management has the power to say no to wage increases, Mr. Hazard said they probably will not when they are faced "with the loss of customers not willing to bleed and die for the good of the economy as a whole."

(Continued on page 4)

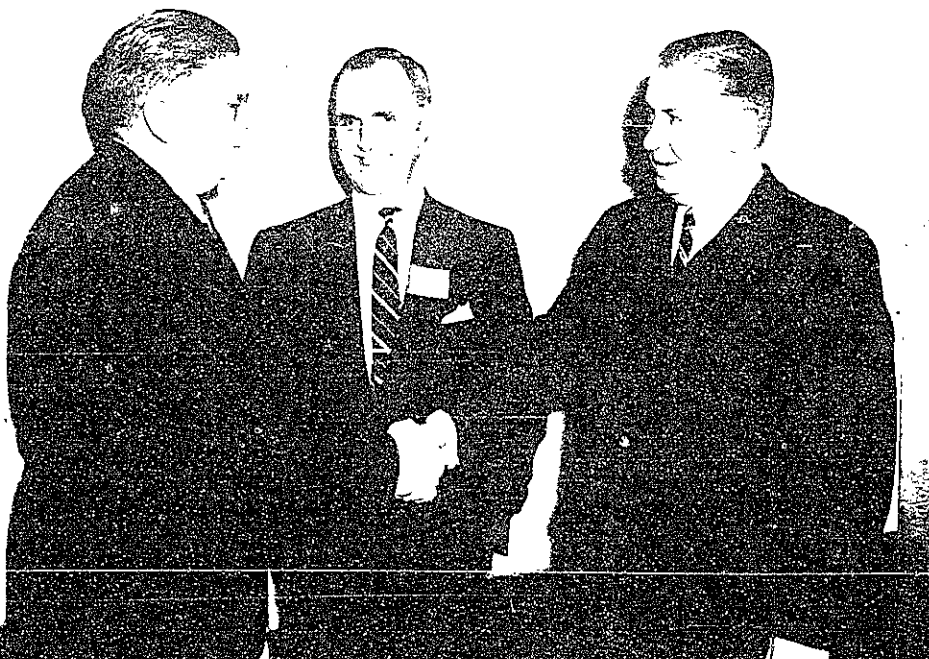


Photo by Technique

Dr. Killian welcomes Secretary of Labor Mitchell as Prof. Meyers looks on. Mr. Mitchell was guest speaker at the Industrial Relations Conference held here last Friday.

First Bohr Lecture Tonight In Kresge

Niels Bohr will inaugurate the Karl Taylor Compton Lecture Series tonight with the first of six speeches heralded as among the most significant in his life.

Professor Bohr's topic tonight will be "Elements of Classical Physics." All six lectures will be in Kresge Auditorium.


The second lecture, Thursday, will deal with "Atomic Theory and the Quantum of Action."

All six lectures are open, admission free, to the public. WTBS will broadcast the first lecture live, and will tape all six.

ON THE INSIDE

Arthur D. Little '85 was one of a group of creative undergraduates who founded The Tech 76 years ago. In later years his creativity led him to found the company which bears his name, a research firm which today is almost unique in the variety of its projects. Read the story of ADL on page three.

The



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editorial

The issue of responsible, representative student government is at stake. In partial reaction to various pressure groups on campus, a motion was moved and tabled at the last Incomm meeting to the effect that the students' governing body is in favor of an event similar to Field Day, subsequent to approval of detailed plans. In addition there was indicated a desire to see strong support for such an event from within the student body before it would be authorized.

Institute Committee is to be commended for bringing up the motion involved and for tabling the motion for further consideration. It is questionable, however, as to what further support is needed beyond that which has already been shown. We hope that Institute Committee does not expect to see all of the proponents of the reestablishment of Field Day at its Thursday night meeting in Litchfield Lounge. The basic principle by which a responsible representative student government must act is exactly what the term implies, responsible representation, and it is on this principle that the members of Institute Committee must base their decisions. Both the Freshman Council and the officers of the Sophomore class have shown sincere interest in holding a Field Day. Since these two groups are the representative bodies for the two classes directly involved, their interest constitutes a mandate for the passing of the motion and the immediate consideration of plans for the eventual re-birth of Field Day.

around mit

The MIT Synchrotron

Making satellites, or trying to, is only one way physicists are earning their room and board these days. Another is to study what goes into the making of atoms, the building blocks from which satellites and several other things of lesser importance are formed.

For the latter aspect of physics we go to Building 26, home of the synchrotron, where research work is carried on 24 hours a day in the study of elementary atomic particles. Here, under the supervision of Dr. Louis Osborne, undergraduate physics students and regular staff members form a well integrated team whose aim is to contribute knowledge in a field where the fundamentals are yet unknown. This aim has been achieved with much success as the synch lab has played a leading role in this pioneering field of physics since its creation in 1950.

The center of activities at the lab is the synchrotron, an electron accelerator capable of producing 350 million electron volts of energy. Electrons move in a vacuum within it at increasing speeds and eventually are deflected at a platinum plate. The result of this collision with the plate is the emission of high energy gamma rays which bombard the chosen target. By analyzing the effects of this, the character of the nuclear field can be more clearly defined.

One of the unique features about the MIT synch lab is the emphasis placed on close cooperation between undergraduate and staff. Several physics majors do their bachelor theses at the lab each year and add significantly to the knowledge in the field.

Moreover, Dr. Osborne was quick to point out, the new high energy MIT-Harvard accelerator being built in Cambridge will not make the present lab obsolete. "We have much to learn about the atom at all energy levels."

—Mark Weissman '60



college world

van Rensselaer and I stopped in at the Eliot Lounge for a scotch and water before the dance. It was really rotgut though; and there were too many boors getting drunk that looked as if they were only fifteen or sixteen years old. I quite despise fakery of that sort. We exited the Eliot so as to be a fashionable forty-five minutes late for the prom, and left the conventionals in our dust as we motored away in Van's Alfa Romeo.

When we arrived, even outside the hotel Van and I could hear the band playing, and a pang of sorrow tore at my heart. Poor Lester had been so over-worked at the New York cotillions lately, and already the peasants had turned the affair into an orgy. But woe, how much more wrong could I have been!

Van and I edged our way across the crowded dance floor. Champagne abounded, and the titters of sparkling and bleary-eyed girls rang lightly over the music. A wonderful sight; oh joy! Lester was running through "Just One of Those Things" for the fourth time; there was a representative group of hunter red and Sherwood Forest green dinner jackets; and the whole thing was . . . well, just a heartwarming libation to the good life!

And then I saw Evvelyn. I could sense her charm and attraction a mile away: sympathetic smile, delicately inviting eyes that seemed to say, "Oh Rolphe. It's so grand to see you!"

"Van," I said, tugging madly at his sleeve—he was staring at some young debutante who was obviously putting on an act—"do come and meet Evvelyn. Old friend, you know—one of the Philadelphia Buckleys." Van muttered something about his brandy flask and we sped to Evvelyn's side.

Like hungry wolves were they packed around her, but quickly parted when Evvelyn rose to duty's call. "Oh Rolphe, it's so grand to see you!" My heart sang. Then I noticed her beaming at Van. "Evvelyn," I said, "it's me, Rolphe. How are you, sweet?"

"How can you forgive me darling? Must be this dreadful Vouvray. By the way, Rolphe, how's Groton treating you?"

I smiled, sipped some Vouvray, and told her I was now at MIT. At this, she shrugged and giggled to Van, who returned the giggle with far too much intimacy to suit me. My pride, after all, had not gone unblemished by her tactless error. "Evvelyn, I so want you to meet my dearest friend, Todd van Rensselaer."

"Oh," she overflowed, "I once had an affaire de coeur with one of those chaps over at Rensselaer. I never could stand Troy, though. What did you say your name was, darling?" Van blushed. "Oh from the Cape, you say? Let's see—Henry Robinson? Michael Palmer?" She returned her precious glance to me. "Oh Farley, your friend is so adorable!" Back to Van: "Where do you summer? I'm so bored at Banff or Nassau now I'm simply dying to discover some new, romantic, little hideaway." She toyed with the Vouvray glass with her lips and giggled confidently at us mortals.

Just then, I heard a mild shriek behind me and turned just in time to avoid the man, beaming at Evvelyn and bearing down upon us. Appeared extremely uncivilized. Evvelyn and the newcomer embraced fervently and she swooned to him, "Oh Rolphe, it's so grand to see you!" He looked embarrassed as she continued: "Long Island, you say. Do you know . . ."

—Sidney Magee, Jr. '62

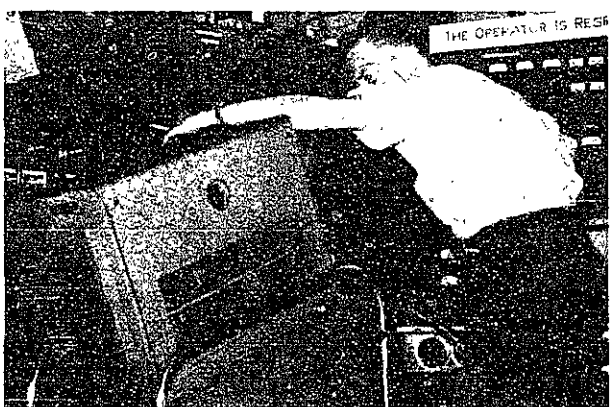



Photo by Jerry Weingart
Control panel of the MIT synchrotron

"RICHARD II" TRYOUTS
Dramashop's major production this fall, "Richard II," will be presented December 11-14. Tryouts will be held in Kresge Auditorium, November 11, 12, and 13, at 7:30 p.m.

"OTHELLO" TICKETS
The Canadian Players of Stratford Ontario, will present "Othello" this Saturday night in Kresge Auditorium at 8:30 p.m. Reserved tickets can be picked up this week in Kresge.



AN ENTHUSIASTIC STORY OF THE WORLD TODAY!
STARRING JAMES MACARTHUR
The Kenmore Theatre has played many fine pictures in recent years . . . out of the ordinary films . . . Academy Award winners . . . long-run triumphs . . . but never in our experience has any of them aroused advance interest to compare with "The Young Stranger"
THE YOUNG STRANGER
with KIM HUNTER and JAMES DALY
NOW PLAYING
KENMORE



On Campus with Max Shulman
(By the Author of "Rally Round the Flag, Boys!" and, "Barefoot Boy with Cheek.")

THE PARTY WEEK END: ITS CAUSE AND CURE

With the season of party weekends almost upon us, my mail of late has been flooded with queries from young inmates of women's colleges wishing to know how one conducts one's self when one has invited a young gentleman for a weekend. This morning, for example, there were more than 30,000 letters, each containing a lock of hair. I gave the hair to a bomb-sight maker and the lanolin to a dry sheep of my acquaintance, and I turned instantly to the question: How should a young lady deport herself when she has asked a young gentleman to be her guest at a party weekend?

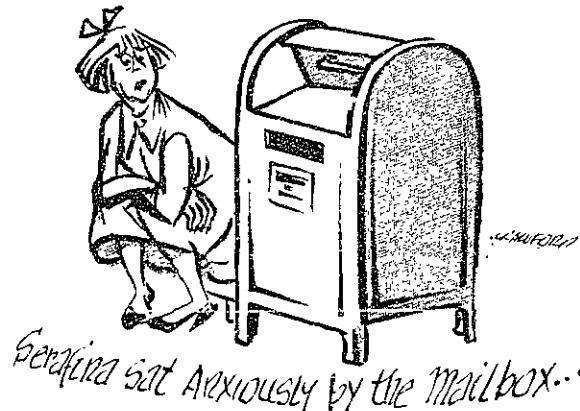
Well, my dear girls, the first thing to remember is that your young gentleman is far from home and frightened. Put him at his ease. You might, for instance, surprise him by having his mother sitting in a rocker on the station platform when he gets off the train.

Next, what kind of corsage should you send your young gentleman? Well, my beloved maidens, orchids are always acceptable.

If you find, my esteemed fillies, that your local florist has run out of stock, do not be dismayed. Make a corsage out of paper. But pick good, stiff, durable paper—twenty dollar bills, for example.

Remember at all times, my fond wenches, to show your young gentleman courtesy and consideration. Open doors for him, walk on the traffic side of the path, assist him to the punch bowl, zip his parka, light his Marlboros. (What, you ask, if he doesn't smoke Marlboros? Ridiculous, my precious nymphs! Of course, he smokes Marlboros! Don't you? Don't I? Doesn't everybody who knows a hawk from a handsaw?? What other cigarette gives you such a lot to like? Such filter? Such flavor? Such flip-top box? No other, my sweet minxes, no other. Marlboro stands alone, and any man worthy of you, my estimable damsels, is bound to be a Marlboro man.)

If you will follow the simple instructions stated above, my good lasses, you will find that you have turned your young gentleman into a fast and fervent admirer. There is nothing quite like a party weekend to promote romance.



I am in mind of a party weekend some years ago at Miss Pomfritt's Seminary for Genteel Chicks in West Linotype, Ohio. Serafina Sigafoos, a sophomore at this institution, majoring in napkin folding, sent an invitation to a young man named Fafnir Valve, a junior at the Joyce Kilmer School of Forestry, majoring in sap and holes.

Anyhow, Serafina sent an invitation to Fafnir, and he came, and she showered him with kindness and cuff links, and then he went away, and Serafina sat anxiously by the mailbox, wondering whether she would ever hear from him again. Sure enough, two weeks later she got a letter: "Dear Serafina, Can you let me have fifty bucks? Yours, Fafnir."

Whimpering with ecstasy, she ran to the bank and withdrew the money and mailed it to him. From then on, she got the same request every week, and as a result, she became very well acquainted with Ralph T. Involute, teller of the West Linotype Bank and Trust Co., and their friendship ripened into love, and today they are happily married and live in Stamen, Oregon, where Ralph is in the extruded molasses game and Serafina is a hydrant.

Every weekend is a party weekend when you smoke Marlboros, whose makers bring you this column throughout the school year.

Research Of All Kinds At Arthur D. Little; From Golf To Iron

It Is Among Oldest In Country Devoted Entirely To Research

by Gus Pettit

In 1886, Arthur D. Little and Roger B. Griffin, both MIT graduates, founded Arthur D. Little, Inc., which is now the oldest private industrial research organization in the United States. Its staff has grown to 200 and it now has offices at 30 Memorial Drive and labs at 15 Acorn Park on Route 2.

ADL has worked on such diversified projects as the production of the best iso-octane as an anti-knock standard, the first economical efficient process for production of liquid Helium, and the first industrial application of war-time operations research.

Weath A Favorite Subject At ADL

Among the scientists who make up ADL's staff are such men as Dr. Bernard Vonnegut who received his Ph.D. in Chemistry from MIT in 1929.

In June, 1953, Dr. Vonnegut watched the towering cloud system from which a tornado had just descended,

few inches from the stream and notice the astounding effect it has on the fountain of water. (The idea is to make the drops coalesce—not just bend the stream.)

Even less is known about the causes of tornadoes than is known about thunderstorms. Popular theory holds that tornadoes are caused by tremendous wind currents within a cloud system. However, in investigating previous thunderstorm studies, Dr. Vonnegut found some interesting deviations from this opinion. Both Lucretius and Venturi hinted at the idea that tornadoes are electrical in nature and Francis Bacon theorized that tornadoes may be caused by lightning. In the 1830's a tornado swept through Paris. Those who saw it and lived to tell about it described it as a "column of fire". A group of property-holders tried to collect from their insurance companies on the ground that the damage to their homes had been caused by lightning. They called in an expert—a man named Peltier—and won the case. A similar case came up in the U. S. in 1870. This time the insurance companies had the expert—a man named Finley—who gave 143 reasons why tornadoes could not be caused by lightning—and his theories are still generally accepted.

The studies conducted by Dr. Vonnegut and his associates have led them to believe that wind currents in clouds may act as huge Van de Graff generators which could cause an almost continuous spark, generating enough heat to cause a tornado. It is well known that an intense heat source such as a burning city, sometimes causes a tornado to form.

Dr. Vonnegut's theories have received mixed reaction. Only further study will tell whether his studies are leading in the right direction.

Many Smells In Odor Library

Perhaps ADL's most offbeat department is the Flavor Lab. Jacqueline Knowles will be glad to show you the odor library which contains over 5000 odors (in bottles). They range all the way from the smell of a rose to the smell of a dirty old shoe or a grasshopper (the drink—not the insect). The lab has an "ideal" kitchen, complete with double wall ovens for preparing products to be tested, and a model living room with Cape Cod cottage exterior—all this in the labs at Acorn Park—where clients can sample their products in a homey atmosphere.

Mrs. Knowles says that more manufacturers are making use of the flavor lab now that quality control and better packaging have forced them to turn to flavor as a selling point for their products.

In the first real attempt to make an unambiguous taste-testing scheme,

ADL developed a method which employs a panel of five carefully screened testers who taste the product and work out a "flavor profile", rating the flavor on the relative strengths of its various component flavors. For instance, to get a profile on a particular coffee, the panel members might use green coffee beans, burnt coffee beans, and burnt bread as standard flavors by which to judge the coffee in question.

Extreme care must be used in these



Photo by Arthur D. Little Corp. Charles Moore in space suit in which he ascended to 75,000 feet. An ADL employee, he was the first man to ascend to this altitude in a balloon.

tests to assure that no stray odors or flavors interfere. For instance ADL found that glass often imparts a musty odor to foods, so porcelain cups are always used. The walls of the room in which the tests are made are covered with aluminum which absorbs very little odor, and the humidity and temperature are controlled.

A typical case history reads like this: Avon Products, Inc. asked ADL flavorists to work out an ideal toothpaste flavor. The flavor panel set up a profile of what a good toothpaste flavor should be: "High impact of blended minty flavor with cooling, some mouthfeel and an over-all connotation of cleanliness".

Besides its estoteric work in determining ideal flavors for various products, the Flavor Lab is often called on to isolate an objectionable flavor or odor in a new product and determine a way to isolate or mask it. Recently a large salad dressing manufacturer's product began to be returned with complaints of an objectionable flavor. The organic lab discovered that a minute element in some of the minute quantities of pepper added for "bite" was causing the objectionable flavor. The component causing the trouble was about .000001 of the mass of the mayonnaise.

Fluid Bed to Reduce Iron Ore

All ADL research is not of the exotic variety. One of their most important projects is the development of the Esso Research-Little process for the direct reduction of iron ore. The basic principles of the process were worked out by Dr. Warren K. Lewis, professor of Chemical Engineering at MIT. The most interesting feature of the process is its use of a fluid bed for the reduction of the ore. In this process, the ore is ground to a fine powder, is preheated and is dropped into a vertical, insulated shaft. The shaft is closed off at the bottom with a porous plug through which the hot reducing gases can be blown. The reducing gases consist of natural gas which has been burned in air to carbon monoxide and hydrogen. When these gases are blown through the "plug" with sufficient velocity the particles of ore are suspended in the air and act exactly as a fluid does, even to the point where the ore will run out of an overflow pipe if one is installed. Of course, if the air velocity is too high the ore is simply blown out the top of the shaft. After the ore has been reduced it can be briquetted or made into "pinch rolls".

There are a number of reasons why this process is more economical than other reduction methods.

First, fluidized-solids reactors are ideally suited for ease of materials handling.

Secondly, only a low capital cost is involved due to the simplicity of the apparatus. Also, temperature control is easy due to the rapid mixing of the ore particles, and, of course, there is the obvious fact that excellent contact is made between the reducing gases and the ore since it is so finely divided. In fact, contact is so good that the reaction goes to 60-80 per cent equilibrium in 1/2-2 seconds after the introduction of the gas.

An economical way to expand ore reduction facilities has been needed by the steel industry for some time. At present it costs up to \$400 per annual ton to expand steelmaking facilities, whereas new facilities have been installed for as little as \$33 per annual ton.

Bob Almeida, a Course X man, who received his diploma in 1944, has been working on the project ever since Esso Research, which holds the

receptor, Operations Research began during World War II when ADL was called upon to determine such problems as "How large should a convoy be?" or "How many hours of flying time should be allowed to a plane before it is overhauled?" Since the war the questions have changed to "How much inventory should a company keep on hand to satisfy its customers and still keep down storage costs?" or "How should a company's advertising policy be arranged for greatest effect?" ADL tries to "quantify" the answers to such problems as much as possible.

The "Regional and Corporation Development Group" is also located in the offices on "the Drive". Here such problems as how Iraq should spend its oil royalties are thrashed out. A long range plan worked out by ADL for Iraq has been adopted and about 70% of her oil royalties are now being

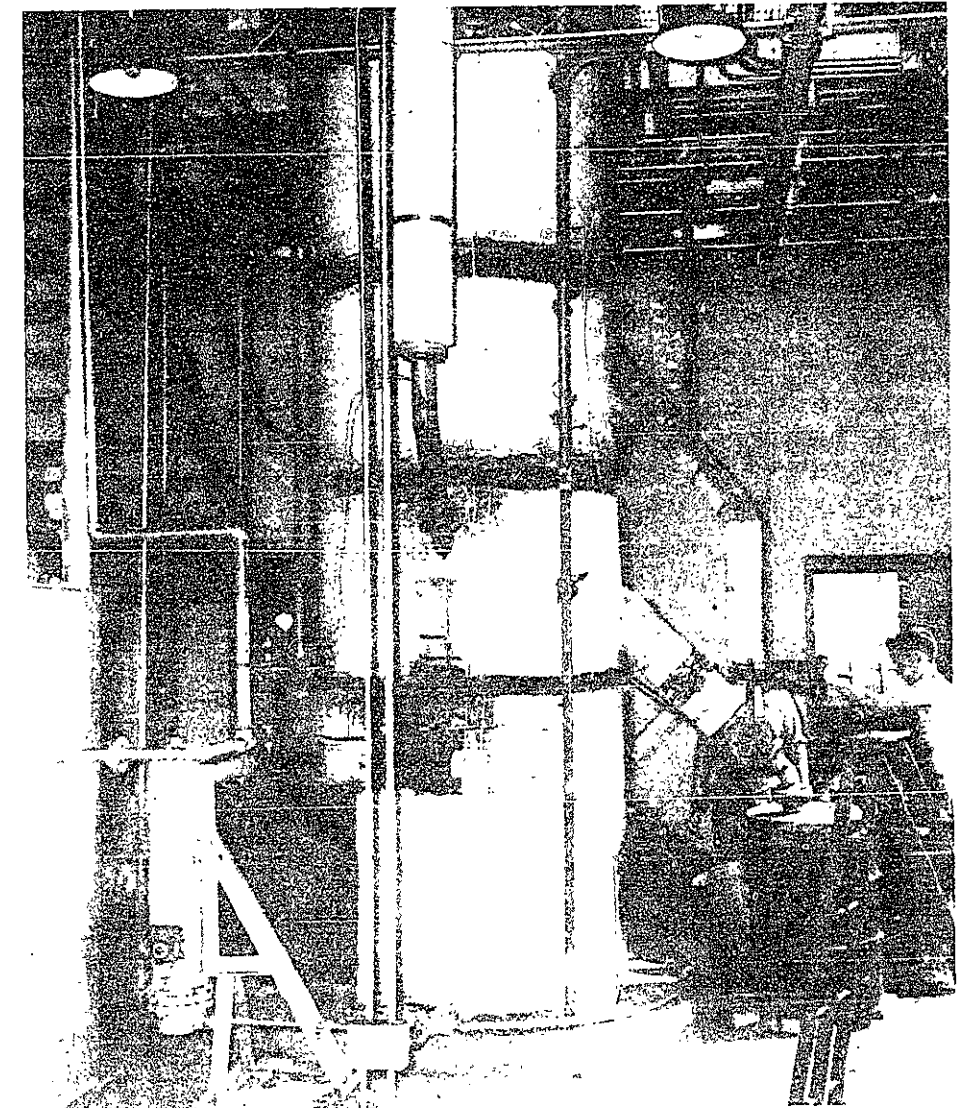


Photo by Arthur D. Little Corp. Interior of pilot plant for Esso-Little ore reduction process now in operation at Acorn Park. Shown is the "fluid bed" reduction furnace in which powdered ore is reduced to metal.

patents on the fluid bed process, asked ADL to develop it. ADL has already built a pilot plant and Mr. Almeida said Monday that ADL hopes to have a semi-works plant in operation next summer. Steelmakers from all over the world will be interested in the performance of the semi-works plant. If it proves successful it could be used immediately wherever the raw materials supply is inadequate for present reduction methods or where the market is insufficient to warrant building a blast furnace installation (which must have an out-

spent on projects and investments recommended by ADL. ADL has given Honduras advice on formulating their economic policy and has worked with Puerto Rico for 15 years on an extensive economic development program. West Virginia, Florida, Alberta, and the Philippines have all received economic advice from Arthur D. Little.

What Makes a Golf Ball Tick?

The final word in exotic research is undoubtedly ADL's quest into the properties of golf balls. In recent years many golfers have attained such long drives that Lord Brazibon of England has asked if there might be a critical velocity above which the wind resistance encountered by the ball decreases, giving the powerful driver an unfair advantage over his opponents.

At any rate, drives have become so long that many golf courses have become outmoded. The U. S. Golf Association asked ADL to determine just what makes a good drive. Dr. W. E. Gordon and his associates in cooperation with several top amateur golfers made a series of practice shots which they photographed with the aid of some of Professor Harold Edgerton's famous strobe lights.

The only definite conclusions they have reached so far are that the trajectory of the ball is the most significant contributing factor to the length of the drive, with the initial velocity second, and the hardness of the ball coming in last. Dr. Gordon hopes to formulate a "general theory of golf balls" to determine the exact behavior of the ball. Perhaps then Lord Brazibon's question can be answered.

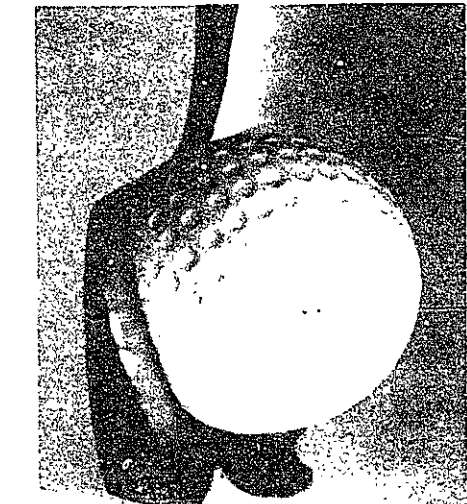


Photo by Harold E. Edgerton from A.D.L. Acorn. This photo was taken by Professor Harold Edgerton of MIT in a study he conducted in 1933 for ADL.

How Big Should a Convoy Be?

The ADL offices at 30 Memorial Drive are the center for its "Operations Research". As explained by Dr. Irving Telling, public relations di-

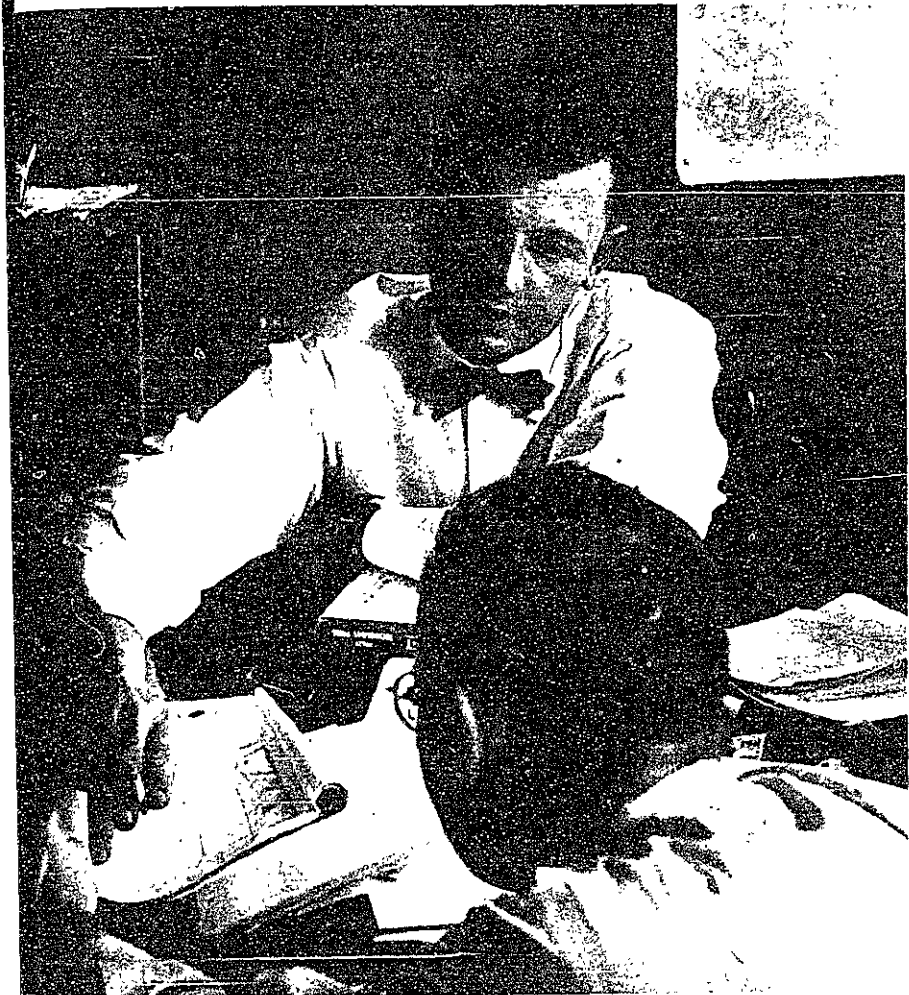


Photo from A.D.L. Acorn. Dr. Bernard Vonnegut, student of atmospheric electricity, with his associates.

ing almost 100 people in Worcester County. Since that time one of its main interests has been atmospheric electricity. The mechanics of formation of lightning are unknown but there are about twelve theories currently held by various meteorologists to explain the mechanism of lightning formation, all based on the idea that rain, sleet and other forms of precipitation cause lightning to form. Dr. Vonnegut points out that there is a serious question whether precipitation causes lightning or whether precipitation is caused by lightning. Last summer Dr. Vonnegut and Charles B. Moore of ADL went to New Mexico where they tested the part of modern-day Ben Franklin, sending a radiosonde aloft in a balloon to detect electric charge in clouds and simultaneously following the cloud with ground radar to detect the presence of rain. Invariably the radiosonde detected an increase in negative charge before any raindrops were detected by the radar, which lends substantial evidence to the theory that raindrops are formed in the presence of an electric field in the cloud. Dr. Vonnegut has a dramatic experiment set up in his lab to demonstrate the effect of an electric field on the formation of raindrops. Anyone interested in performing a new and original experiment needs a small size (an eyedropper will do), holding a thin, vertical stream of water about 4 inches high. Then run a comb through your hair, hold it a

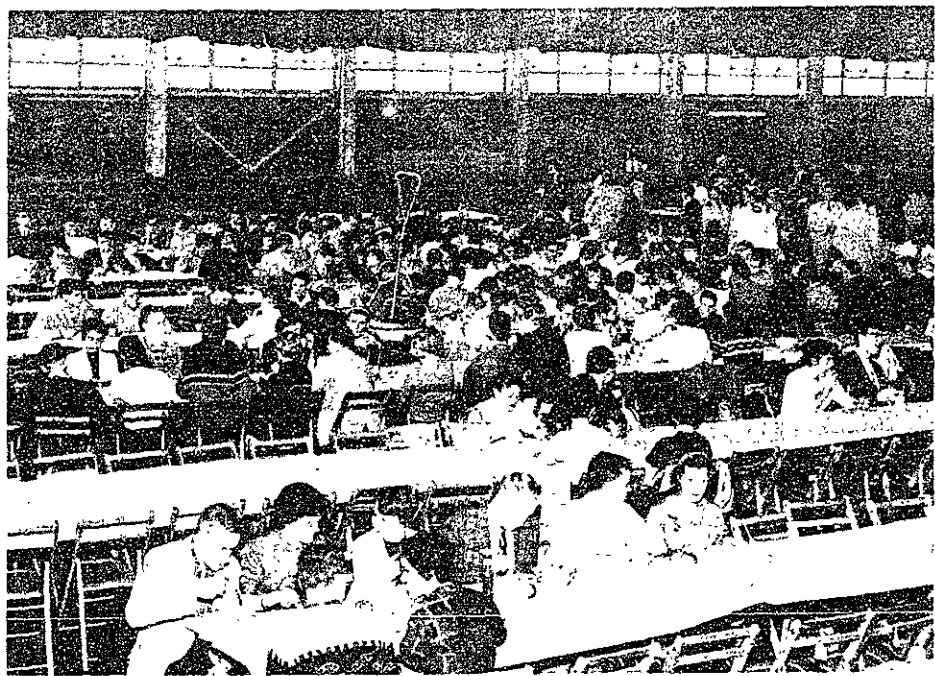


Photo by Louis Nelson
Part of the 1100 who attended MIT's first All Sports Day devour ham and baked beans at the luncheon preceding Saturday's activities.

MITCHELL

(Continued from page 1)

In discussing what he called "the sobering influence" of strikes, Mr. Hazard said:

"The price of saying no to further wage increases will be some strikes. No one wins a strike. But this cliché is only partly true. A strike which lasts long enough (I consider six weeks a minimum) has a considerable and favorable effect for a long time. It hurts enough to be remembered. Its sobering influence affects the future, and the fact that a real strike occurred is one of the best reasons that it will not be necessary again—not soon.

"In any case if management is ever to stiffen its backbone, is ever to exercise its great powers in the broader interests of the capitalistic system rather than in the narrower interest of production of goods at any cost, this is the time—in these days

Will the party or parties who deliberately removed Dollar Bill No. 00822221A from the "Behold the Lord Thy God" poster on 4th floor Burton House return it to the undersigned. NO ACTION WILL BE TAKEN. M. Jacobs, J. Steinfeld, D. Chayet, W. Higginson

SEABURY SOCIETY

The MIT Seabury Society are meeting every Wednesday night at 7 p.m. in Room 7-106. They hope to sponsor a radio program on WTBS and need ideas and help. All Episcopalians are invited to attend.

of inflation, creeping or otherwise, to say no."

The concluding address of the Industrial Relations celebration was given by Secretary of Labor James P. Mitchell, Friday night, on the subject "Looking Ahead in Industrial Relations in the United States".

Secretary Mitchell noted the strong and steadily-growing influence of the public on labor-management negotiations. "The people," he said, "are an unseen third party at the table of collective bargaining."

With regard to the struggle between the United States and Communism, the Secretary cited the mission of America as one of convincing the world that the way of free industry is best. "The Communists," he said, "are skilled in making their isolated developments overshadow our far greater general progress. The basic difference between the two achievements is that the Communists achieve their end at the expense of the masses, while we do not."

PRE-MED STUDENTS

Dr. James M. Faulkner, Advisor to Pre-Meds, will speak on "Pre-medical Education at MIT" in Loofbourow Lounge, 16-611, this Wednesday at 5 p.m.

CATHOLIC CLUB MEETING

Father Stock from St. Steven's Priory in Dover will speak on "Salvation and Sanctifying Grace," on Wednesday, November 6, at 5 p.m. in Room 2-190.



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Now, out of all this grows our contest. We know... and the buyers of Van Heusen Century Shirts know... that the wrinkles have disappeared. But the question that plagues us all is: *Where?* What has be-

come of these wrinkles. Some say they are on the brows of elderly professors. Others say they have migrated to the ocean where they cause waves. Where do *you* think the banished wrinkles have gone? Where would *you* go if you were a banished wrinkle? For the best answer to this question Van Heusen will award a grand prize of a complete wardrobe of Van Heusen Century Shirts in 5 collar styles. To the 1000 next best answers there will be consolation prizes of a box of genuine wrinkles.

Enter today. Mail your answer to Van Heusen's mammoth "If I were a wrinkle" contest to Phillips-Van Heusen Corp., 417 5th Ave., N. Y., N.Y. Don't forget to send us your shirt size with your entry.

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If you're intrigued by the challenge and complexity of the engineering problems in Guided Missiles, High Speed Data Processing, Bombing and Fire Control Systems, Infrared Devices and Underwater Ordnance...

If you want to launch your professional career in Systems Engineering, Automatic Machinery, Mechanized Equipment, Instrumentation and Controls...

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THE TEXAS COMPANY



WTBS "Campus Forum" Premier Interviews MIT Assistant Treas.

The first WTBS Campus Forum program was broadcast to MIT resi-
dents last Thursday night. Mr. Wil-
liam Mackintosh, Assistant to the
Treasurer, was interviewed on the
subject of cutbacks in dormitory ser-
vices. The interview, held by Campus
News Director Dave Waldbaum '59
in the studios of WTBS, was taped
at 3:30 on the afternoon of the
broadcast.

Mr. Mackintosh said that, in his
personal opinion there may have been
some miscalculations on the nature
and results of the cuts. He further
stated that most of the adverse re-
actions of the students were the re-
sult of the fact that, due to poor
communications, the dormitory resi-
dents were unaware of the planned
cuts until they were actually put
into effect. He said that the cuts will
remain, although unpaid student
staff could man desks and do clean-
ing if they wished. He also outlined
the plan for setting up a housemas-
ter and Resident-Tutor system in the
dormitories, to be begun next year.

This program was the first of a

series of programs, to be broadcast
weekly at 8:30 p.m. Thursday. Next
week's Forum is planning to feature
a discussion between Dean Rule and
Arnold Amstutz '58, UA President,
on the subject of Open House hours.
The following program plans to have
an interview with President James
R. Killian, Jr. Future Forums will
include talks with Bursar W. A.
Hokanson, Prof. Neils Bohr, Dr. Fred
L. Whipple of the Smithsonian Ob-
servatory, and other members of the
administration, faculty, and local per-
sonalities.

WTBS plans to post the subject
of the week's interview in dormito-
ries and Institute buildings, with a
box into which interested students
may drop suggestions for questions
that they would like to have put to
the person interviewed. This program,
according to Dave Waldbaum, is
part of a new WTBS policy to in-
crease its coverage of campus news
and activities. Other activities plan-
ned along these lines include campus
news reports and publicity announce-
ments.

WTBS TONIGHT

"Light Classical Interlude," 9-10 p.m.
Tchaikovsky—Nutcracker Suite
Rimsky—Korsakov—Capriccio
Espagnole—Gershwin—An Amer-
ican in Paris.
"Concert Hall," 10:10 p.m.
Shostakovich—Symphony No. 5
Brahms—Double Concerto for
Violin and Cello
Weber—Overture to "Der
Freischutz".

"DARK OF THE MOON"

The MIT Community Players will
present "Dark of the Moon" at 8:30
p.m. on November 7, 8, 14-17, and
at 2:30 p.m. on November 17 in the
Little Theatre. Reserved tickets are
on sale for \$1.00 in Building 10 from
12 to 2 p.m. weekdays.

ATTENTION SPORTS WRITERS

There are still several openings for
staff candidates on the Sports Board
of The Tech. Anyone interested re-
port to the newspaper office, base-
ment of Walker Memorial at 8:30
p.m. Wednesday, Nov. 6.

HOBBY SHOP

The first meeting of Hobby Shop
will be held in Room 2.051 on
Wednesday, November 6th, at 5
p.m. All invited.

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- Systems Analysis

NOVEMBER 6, 7

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'59 Junior Prom Sees Big Turnout



Photo by Technique

Even the rain, which is always an uninvited guest at MIT formal, could not daunt these vivacious JP-goers. A capacity crowd danced, talked, sipped, enjoyed themselves—on that night of nights.



Photo by Technique

Dean Fassett and Mr. Carlisle, Director of Student Employment, seemed to enjoy the festivities at the Junior Prom held last Saturday night in the ballroom of the Statler hotel. About 450 couples danced to the music of Lester Lannin and his orchestra.

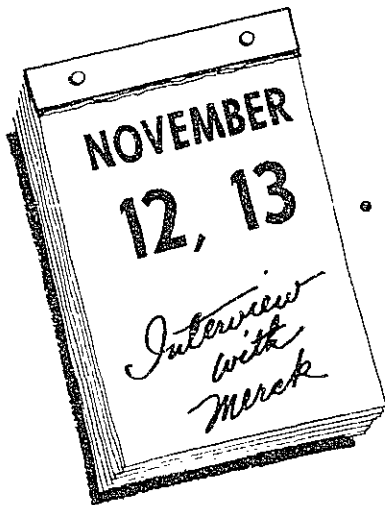
Pittsburgh Scene Of Regional Conference

Top scientists from the Institute will visit Pittsburgh on December 7 for a regional conference sponsored by the local MIT Club. Several hundred industrial and business leaders of western Pennsylvania, many of them MIT alumni, are expected to attend.

Speakers will include President James R. Killian, Jr.; Dean E. P. Brooks of the School of Industrial Management; Dean George R. Harrison of the School of Science; Dr. Jerrold R. Zacharias, professor of physics; Dr. Irwin W. Sizer, head of the Department of Biology, and Dr. Morris Cohen, professor of metallurgy.

The conference is one of a series held in principal cities annually by MIT to report on new developments in science and technology. Another will be held next spring in Washington.

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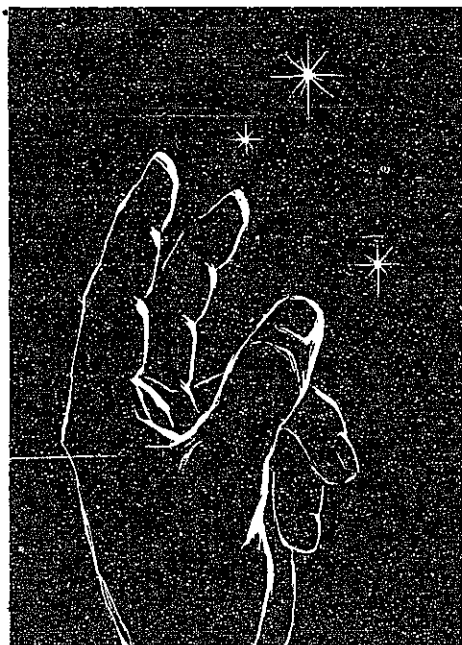
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Four MIT Teams Triumph In Rain Soaked All Sports Day

In traditional Field Day fashion, the fall monsoons descended upon Cambridge and considerably dampened the first All Tech Sports Day. The rain, which varied from a light drizzle in the morning to a downpour early in the afternoon, forced cancellation of the inter-squad track meets, and the calling of the All-Star football game in the second quarter.

In the varsity sports which survived the precipitation, MIT came through with a 4 wins, 3 losses and a tied record. In the winners' column were the sailing team, which took the Schell regatta, Varsity and JV heavy crews, and the soccer team. Tech squads lost in first string rugby, and in the frosh and varsity lightweight crew races. The second string taggers fought their way to muddy a

Because of the rain, it is impossible to say whether the day was a success spectator-wise. A few stalwarts braved the weather to watch that there was of the touch football game, but other than that an on-looker was a rarity.

MIT Sailors Keep Schell Trophy

The Tech varsity sailors successfully defended the Schell trophy this week-end in a hotly contested battle here on the Charles. In what proved to be one of the most exciting regattas of the season, the Tech sailors turned back the efforts of ten other colleges to win the trophy. In the final score, MIT edged Boston U. by only one point and Brown by only two points.

The Schell Trophy is emblematic of the New England Fall invitational regatta. The eight top teams in New England are invited to sail as well as three colleges from other associations. Cornell, R.P.I., and Wisconsin traveled to Cambridge to represent their associations.

At the regatta's conclusion, New England Graduate Secretary Leonard M. Fowle introduced Professor Erwin H. Schell of MIT, one of the founders of sailing at MIT and on

the national inter-collegiate level, Professor Schell then presented the trophy to the victorious Engineers.

Sailing for MIT were Bill Widnall '59 with crew Ollie Filippi '59 in "A" division and Dennis Posey '59 with alternate crews Carol Dorworth '60 and Bob Hopkins '60 in "B" division. Widnall totaled 107 points with three firsts, Posey gained 110 also with three firsts, both racing eleven times. Neither skipper was high point skipper in his division in the close competition, but the combined total was greater than that of all comers. Ted Turner of Brown was high point skipper for the regatta with 120 points in "B" division.

SUMMARIES:

MIT 217; B.U. 216; Brown 215; Yale 177; Bowdoin 169; Coast Guard 156; Harvard 135; Cornell 119; Wisconsin 106; R.P.I. 96; Rhode Island School of Design 73.

Engineer Booters Defeat USCGA

Sharp passwork by the forward line proved the deciding factor, as the MIT varsity soccer squad trounced the U.S. Coast Guard Academy 4-1 in the mud on Briggs Field Saturday afternoon.

The Beavers dominated the contest from the opening whistle, keeping the ball in the visitors' half of the field throughout the first period. Outstanding play by the losers' goalie averted many Tech scores, but with seconds remaining in the initial stanza, the Engineers' inside left, Dale Rhee '60, gathered in a pass from the right wing and booted the ball past the outstretched arms of the Coast Guard netminder.

Action during the second session resembled that of the first, with the Techmen missing many goals by narrow margins.

Moments after the intermission, the visiting center forward blasted the sphere past MIT goalie Rudy Segovia '58 to knot the score at one apiece.

Beaver left wing, Herb Johnson '58 broke the deadlock shortly, when a crossfield pass from right outside Ernesto Macaya '60 gave him a clear shot at the goal. The Cardinal and Gray widened their lead in the final quarter, as Rhee notched his second goal and Manael Penna '60 knocked in a rebound.

The triumph brought the Engineers' record to five wins, one loss and one tie, which is quite a credit to rookie coach Charlie Batterman.

The booters' next contest will be tomorrow afternoon at 2:30 with Brown here.

Tech Varsity And JV Heavies Win

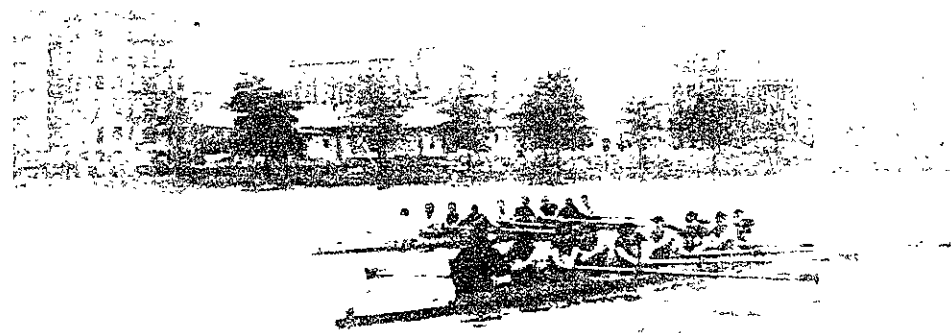


Photo by Carl Brown
Beaver oarsmen pull into the lead towards the climax of All Sports Day rowing competition.

Racing for the first time under their new head coach, Frank DuBois, the varsity and JV heavy crews turned in impressive victories Saturday morning over Dartmouth, winning by two-and-a-half and five lengths respectively.

In the other two contests the varsity lights dropped a decision to the visitors and both the light and heavy freshman crews were defeated by the Dartmouth yearlings. A third varsity encounter had been scheduled but was called off. All races were over the Henley distance, 1-15/16 miles.

Rowing part of the race in the rain, the varsity heavies outdistanced their competitors in an unofficial 7:02.2. The Hanoverians were 2½ lengths behind in 7:11. The JV crew won in 7:03.2, followed by Dartmouth in 7:11.

Viewed from their strong fall performance, prospects look bright for all five crews for their spring season.

and conversion notched early in the opening quarter, the Dartmouth varsity held the Beavers scoreless to bring them victory. The tally was registered when one of the visitors' forwards fell on a loose ball in the end zone.

The only bright spot for the Engineers was the fine play of wing Frank Brady '61, who romped for several long runs.



Photo by Peter Kraus
Despite the poor footing offered by several inches of mud, an MIT back breaks lose for a short run.

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Rain And Mud Stop SAE-All Star Game Before End Of Half

Playing amidst a heavy downpour on Briggs Field last Saturday, Sigma Alpha Epsilon and the intramural all star football team played to a 0-0 stalemate before the game was called in the second quarter. The wet conditions led both teams to have sloppy passing attacks and also prevented any powerful ground gains.

SAE Kicks Off

Receiving the opening kick off, the all stars had possession of the ball for the greater part of the first quarter, even though they made only one first down rushing. The ball changed hands regularly after each series of downs until all star Chuck Ingraham '58 intercepted an SAE pass on his own 40. Shortly after the Sailors' Bob Thomson '58 intercepted a pass from Walt Ackerlund '58, but a pass interference penalty gave the intramural all stars a first down. However, they failed to take advantage of this opportunity. Their ground attack was moderately successful off tackle, but the tight SAE defense effectively stopped end runs.

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"In a company that develops new ideas by the thousands," says 30-year-old William K. Cordier, manager of General Electric's Man-Made Diamond pilot plant, "a young man's career progress need not be limited by his particular field. In my five years with General Electric, I've gained valuable experience in several different fields, and each assignment has helped me to move ahead. Right now, I have an exciting job. I run the world's first diamond-making plant — a business nobody dreamed of three years ago."

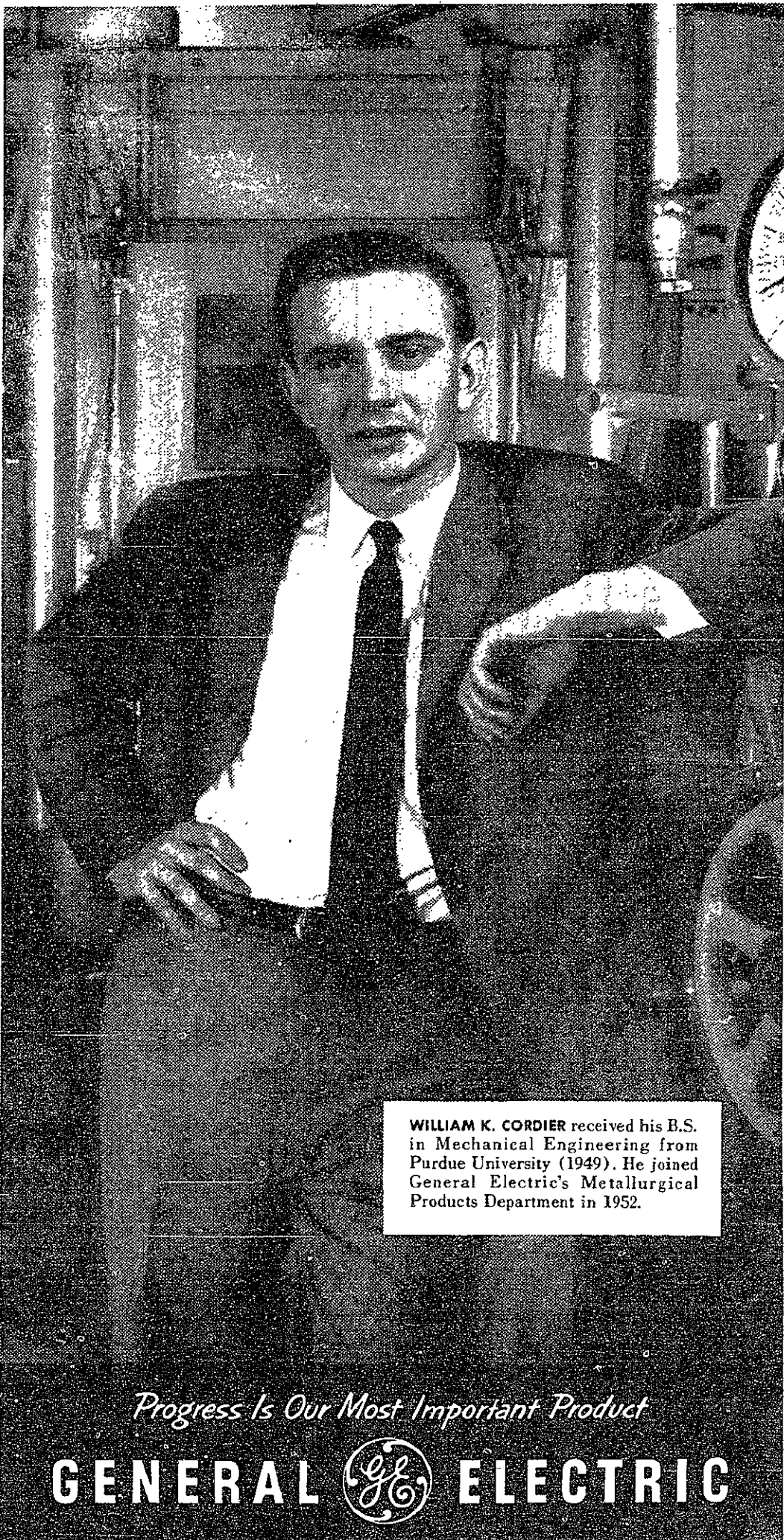
Diamond Making a Reality

The job Bill Cordier holds is an important one, created because General Electric has the scientific and technical resources needed to seek out new knowledge and swiftly translate it into products that people want and need. In 1955, the company announced a major scientific breakthrough — the production of real diamonds in the laboratory. Today, little more than two years later, General Electric is making and selling quantities of these diamonds for civilian and defense use.

Achieving Three-Way Progress

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Educational Relations, General Electric Company, Schenectady 5, New York



WILLIAM K. CORDIER received his B.S. in Mechanical Engineering from Purdue University (1949). He joined General Electric's Metallurgical Products Department in 1952.

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- | | YES | NO |
|---|--------------------------|--------------------------|
| 1. Do you chase butterflies in preference to other creatures of Nature? | <input type="checkbox"/> | <input type="checkbox"/> |
| 2. Do you believe that making money is evil? | <input type="checkbox"/> | <input type="checkbox"/> |
| 3. Do you think Italian movie actresses are over-rated? (Women not expected to answer this question.) | <input type="checkbox"/> | <input type="checkbox"/> |
| 4. Do you buy only the things you can afford? | <input type="checkbox"/> | <input type="checkbox"/> |
| 5. Do you think there's anything as important as taste in a cigarette? | <input type="checkbox"/> | <input type="checkbox"/> |
| 6. Do you feel that security is more desirable than challenge? | <input type="checkbox"/> | <input type="checkbox"/> |
| 7. Do you refer to a half-full glass as "half-empty"? | <input type="checkbox"/> | <input type="checkbox"/> |
| 8. Do you think fads and fancy stuff can ever take the place of mildness and flavor in a cigarette? | <input type="checkbox"/> | <input type="checkbox"/> |

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